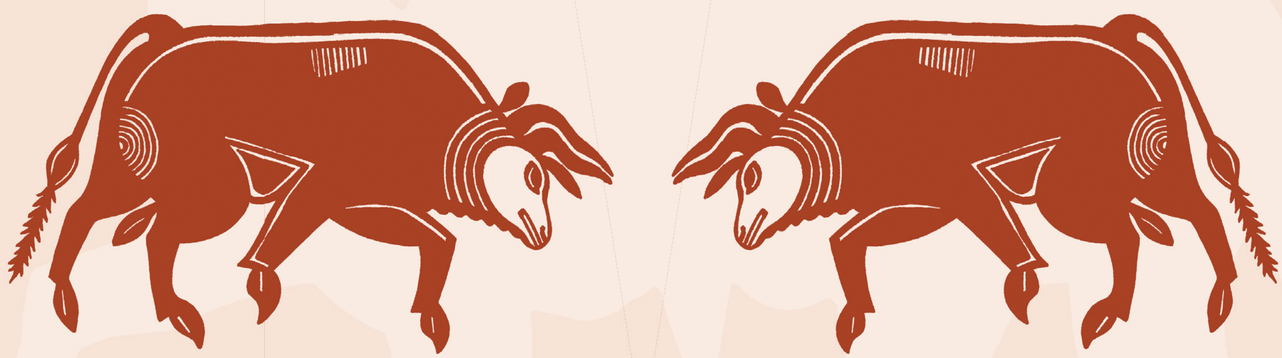
Archaeobiology 3

ARCHAEOZOOLOGY OF SOUTHWEST ASIA AND ADJACENT AREAS XIII



Proceedings of the Thirteenth International Symposium, University of Cyprus, Nicosia, Cyprus, June 7–10, 2017

edited by

Julie Daujat, Angelos Hadjikoumis, Rémi Berthon, Jwana Chahoud, Vasiliki Kassianidou, and Jean-Denis Vigne

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Group photo of the 13th ASWA[AA] meeting June 8th 2017
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FOREWORD

The 13th ASWA conference was hosted by the University of Cyprus, one of the youngest of Europe's universities. In 2019, it was only thirty years since its foundation. Nevertheless, this is a thriving academic institution, which currently consists of eight faculties, twenty-two departments, and eleven research units.

In 1991, and just two years after the university's foundation, the Archaeological Research Unit (ARU) was founded by decree from the Government of the Republic of Cyprus, following the issuance of the dependent legislation by the House of Representatives. The decision to establish the ARU was based on the recommendation of the Interim Steering Committee of the University of Cyprus, which stated the following:

1. Cyprus is offered for primary research in the field of archaeology thanks to its distinctive cultural signature and history, as well as due to the fact that Cypriot archaeology and archaeological research on the island already has a distinguished tradition and international reputation;

2. The subsequent international recognition of the importance of archaeological research in Cyprus should comprise one of the first incentives for choosing the University of Cyprus as a center for postgraduate studies, and will pave the way for the exchange of students and academics between the University of Cyprus and academic institutions overseas.

The faculty members of the ARU, who are also part of the Department of History and Archaeology academic staff, have contributed immensely over the past 28 years to the achievement of the aforementioned objectives for the study and promotion of Cypriot cultural heritage through their research, their teaching, and the practical training they have been providing to students at undergraduate and postgraduate levels. The active study of other regions of the Mediterranean world have not been overlooked either, as members of the ARU academic staff have been carrying out excavations and research projects in Greece, Turkey, and France.

The members of the ARU are actively carrying out research in Pre- and Protohistoric Archaeology, Classical and Byzantine Archaeology but also Archaeometry and Environmental Archaeology, Maritime Archaeology, and Western Art. In the course of the past 28 years, the ARU has laid very stable foundations in all aforementioned specialisations of the archaeological discipline, none of which existed at academic level in Cyprus before the unit's establishment. Through their teaching at undergraduate and postgraduate levels, all members of the ARU academic staff have been contributing to the formation of a new generation of Cypriot archaeologists, equipped with all the necessary knowledge and practical experience needed to excel in this scientific field.

Over the years, the ARU has been very active in organizing international conferences and workshops. The ARU has organized over 50 international conferences, while members of the academic staff have published the proceedings of over 20 scientific meetings held at the ARU.

Thus, when Jean-Denis Vigne came to my office several years ago with the suggestion to co-organize the 13th Archaeozoology of Southwest Asia and Adjacent Areas conference I gladly accepted. The meeting in Nicosia brought together colleagues from all over the world and offered a venue where new results from the field or the laboratory could be presented and discussed. The publication of the conference proceedings enables colleagues who were unable to attend the conference to read about the latest developments in the archaeozoology of this culturally important region.

I would like to close by thanking all the members of the 13th ASWA organizing committee for all the work they have put into bringing so many scholars to Cyprus, many of them for the first time. I would also like to thank the co-editors of this volume for all the work they have put into the publication of the proceedings.

Professor Vasiliki Kassianidou
Director of the Archaeological Research Unit,
University of Cyprus
Nicosia, August 2019

EDITORS' PREFACE

Due to their location at the meeting point of the three Old World's continents—Africa, Asia, and Europe—Southwest Asia and its adjacent areas played a pivotal role in the history of humanity. They received successive waves of our species—*Homo sapiens*—out of Africa. Different processes in several areas of this large region brought about the transition to the Neolithic, and later on the urban revolution, the emergence of empires bringing with them important subsequent religious, cultural, social, and political consequences. Southwest Asia also played a major role in the interactions between East (Asia) and West (Europe) during the last two millennia. The unique importance of Southwest Asia in the history of humanity is strengthened by the, also related to its location, fact that this area is a hotspot of biodiversity, especially in mammals, which were—as everywhere in the world—tightly associated to the history of civilizations in a diversity of roles: game, providers of meat and milk, traded raw material, symbol of prestige and wealth, pets, etc.

Everywhere in the world, the biological and cultural interactions between humans and animals often remain under-evaluated in their heuristic value for understanding complex social and biological interactions and trajectories. This is why, almost half a century ago, archaeologists who were carrying out research and reflecting on such themes founded a very active nonprofit world organization named the International Council for Archaeozoology (ICAZ). This is also why the ICAZ working group "Archaeozoology of Southwest Asia and Adjacent Areas" (ASWA[AA]) was one of the first ones created within ICAZ, constituting one of the largest and most active of ICAZ's working groups.

The ASWA[AA] was formed during the 1990 ICAZ International Conference in Washington, D.C. Its purpose is to promote communication between researchers working on archaeological faunal remains from sites in western Asia and adjacent areas (e.g., Northeast Africa, Eastern Europe, Central Asia, and South Asia). It carries out its mandate mainly through the sponsoring of biennial international conferences. Since 1998, these meetings have alternated in being hosted in Europe or in Southwest Asia: Paris (1998), Amman (2000), London (2002), Ankara (2004), Lyon (2006), Al Ain (2008), Brussels (2011), Haifa (2013), Groningen (2015).

Ongoing armed conflicts and political tensions in several countries of Southwest Asia made it difficult to locate a safe and convenient place that would enable the organizing the 13th ASWA[AA] meeting in within that region. Although Cyprus is currently a member of the European Union, in (pre-)history Cyprus was embedded in the eastern Mediterranean "world." Because of its location, Cyprus was indeed at the confluence of African, Levantine, Anatolian, and Greek cultural streams and, as is common for islands, recombined them in different but always original ways all along its history. Archaeozoology recently provided one of the most convincing illustrations of the tight connection between Cyprus and Southwest Asia, demonstrating that the earliest domesticated mammals, especially cats, pigs, cattle, sheep, and goats, were introduced to the island very shortly after their first incipient domestication on the near continent, that is, during the ninth millennium BC. For all these reasons, Cyprus represented an ideal place to host the 13th ASWA[AA] conference.

Despite the illegal military occupation of part of its territory by a foreign country, the option of hosting the meeting in Cyprus was enthusiastically embraced by all members of the working group, especially because it is open to all nationalities and maintains good diplomatic relationships with a large majority of countries in Southwest Asia. These facts contributed towards the 13th ASWA[AA] meeting in Cyprus (June 7–9, 2017) becoming one of the best-attended ASWA[AA] meetings. It brought together 80 scientists coming from 25 different countries: from Southwest Asia (6 countries), Europe (14 countries), North America (2 countries), and Japan.

They presented their results in 36 oral and 32 poster presentations. They debated the long-term interactions between humans and biodiversity, about the beginning of animal domestication and husbandry, the strategies of animal exploitation from the Paleolithic to modern times, and the symbolic and funeral use of animals through time. They also greatly enjoyed the numerous social events organized, including a fantastic Cypriot mezze dinner, enhanced by a local folk-music band, and a nice excursion to the archaeological sites of Amathous, Kourion, and Khirokitia, and to the museums of Nicosia and Larnaca, which provided ample opportunities for scientific exchanges in a friendly atmosphere.

The hosting of the conference at the new campus of the University of Cyprus was another major reason to the meeting's success. This campus was a convenient and pleasant venue for such a conference, and the strong support of the University of Cyprus, as well as its valuable experience for the organization of such meetings were deeply appreciated by both the scientific organizers and the delegates. Several other partners contributed to the organization: the French archaeological mission "Neolithisation—Klimonas," which is itself strongly supported by the French School at Athens, the Cyprus Department of Antiquities, the French Institute of Cyprus, the French National Center for Scientific Research (Centre National de la Recherche Scientifique [CNRS]), and the French National Museum of Natural History (Muséum national d'Histoire naturelle [MNHN]).

The present volume brings together the texts of 18 of the 68 presentations of the meeting in Nicosia. The editorial board collected the papers and organized their review and editing. We are very grateful to Sarah Kansa (and Open Context), Justin Lev Tov, and Lockwood Press for their constant support in bringing this volume to fruition.

Julie Daujat
Angelos Hadjikoumis
Rémi Berthon, Jwana Chahoud
Vasiliki Kassianidou
Jean-Denis Vigne

1.6 | Bad Contexts, Nice Bones — and Vice Versa?

Günther Karl Kunst,* Herbert Böhm,* and Rainer Maria Czichon†

Abstract

Intrasite comparisons of faunal data from a Late Bronze Age settlement at Oymaağaç Höyük, Turkey are presented here. The main features comprise a multiphase temple, a city gate, a silo, and an underground stairway. The faunal samples studied derive from the temple area and the silo. Samples and contextual aggregations were chosen and defined in accordance with researchers occupied with the stratigraphy and pottery. A contextual framework is provided for each unit. Some samples seem related to well-defined human actions—namely, to ritual activities, and to specific pottery. They derive from single acts representing "closed" or "good" contexts. Other bulky samples accumulated during construction works; they are from the fill used to stabilize foundations. Regarded as secondary or tertiary waste by residual, multiperiod pottery ("bad" contexts), it is shown that zooarchaeological interpretations do not always conform to assessments based on other find groups. The samples are compared according to the composition of the domestic triad (NISP and weight) and skeletal-part profiles. Special attention is paid to the groupings and dispersions of data points derived from related or mutually exclusive taphonomic pathways. In some cases, the original interpretation of contexts was supported by the faunal remains. In others, it was at odds.

Keywords

complex building, construction fill, contextual aggregation, domestic triad, Hittite Empire, intrasite comparison, ritual deposit, silo, taphonomy, temple

Introduction

Archaeological investigations have been carried out since 2008 at the site of Oymaağaç Höyük, which is situated in the Black Sea region of Turkey, province of Samsun in the district of Vezirköprü. The site is located on the western outskirts of the eponymous village in the Vezirköprü basin, about 75 km away from the southern shore of the Black Sea, and just west of an ancient crossing over the Kızılırmak River. Geographically, this is the transition zone between the more humid and temperate climate along the Black Sea coast and the more continental conditions of central Anatolia. Regarding ecoregions, the original vegetation would have been Euxine–Colchic deciduous forest and northern Anatolian conifer and deciduous forest, respectively. It is also the border area between the western and central subregions of the Black Sea Region according to the biogeographical classification of Turkey (Kürschner et al. 1995).

The archaeological project, directed by R. Czichon (Uşak University) and J. Klinger (Freie Universität Berlin), is mainly financed by the Deutsche Forschungsgemeinschaft (DFG; German Research Foundation). It focuses on the northeastern part of the hilltop (285 m asl). Apart from a few stray finds from the Middle Palaeolithic and Chalcolithic periods, the oldest settlement structures belong to the Early Bronze Age (EBA). The remains of a multiphase monumental building, interpreted as a temple, parts of a gate and a city wall, an underground stairway, and a walled Silo belong to the Late Bronze

* *Vienna Institute for Archaeological Science, University of Vienna, Althanstrasse 14, A–1090 Vienna, Austria ([guenther.karl.kunst@univie.ac.at], corresponding author)*

† *Uşak University, Fen Edebiyat Fakültesi, Arkeoloji Bölümü, 1.Eylül Kampüsü, TR–64200 Uşak, Turkey*

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Age (LBA), which historically corresponds to the Hittite Empire era. Both text finds and excavation results suggest an identification of Oymaağaç Höyük with the ancient city of Nerik. According to Hittite religious literature, Nerik was a veneration site of the weather god, which also comprised a holy underground spring. The monumental building at the hilltop, independent of function, is the northernmost example of Hittite monumental architecture discovered so far. It is still unclear how far the LBA settlement extended beyond the surveyed and excavated area of the hilltop. Hittite features are overlaid by a dense concentration of Iron Age (IA) pits and finally by a Hellenistic-Roman-Byzantine cemetery.

This paper discusses selected archaeozoological results of the LBA structures, which are the focus of research at Oymaağaç. Principal information about the site and preliminary results can be obtained from Czichon et al. (2011, 2016) and from the website http://www.nerik.de (in German).

Bronze Age Stratigraphy at Oymaağaç

The general layout and the Bronze Age (BA) archaeological structures of the excavation field are as it appeared in 2015, including some results from the geophysical survey (Figure 1.6.1). A grid of 10 × 10 m squares was superimposed over the hilltop. By the field season 2016, thirty squares had been excavated. The square number may be derived by combining the horizontal and the vertical numbers in Figure 1.6.1—e.g., the Silo is situated in square 7383. The southwestern part of the Courtyard and the northwestern part of the New (younger) Temple were deliberately left unexcavated for future investigations.

The excavation areas are partly separated from each other and thus it is not always possible to establish a continuous stratigraphic scheme for the entire site. This is not due to the excavation method—fine stratigraphy—employed but rather to the site formation processes at work on the hilltop. Most of the older stratigraphy was disturbed down to a depth of 2–4 m when the younger monumental building was erected in the final Hittite phase. On the other hand, this disturbance frequently provides insights into the earlier stratigraphy as soon as the foundation fills of this building are removed. Consequently, the excavation field bears some resemblance to situations normally observed in urban archaeology.

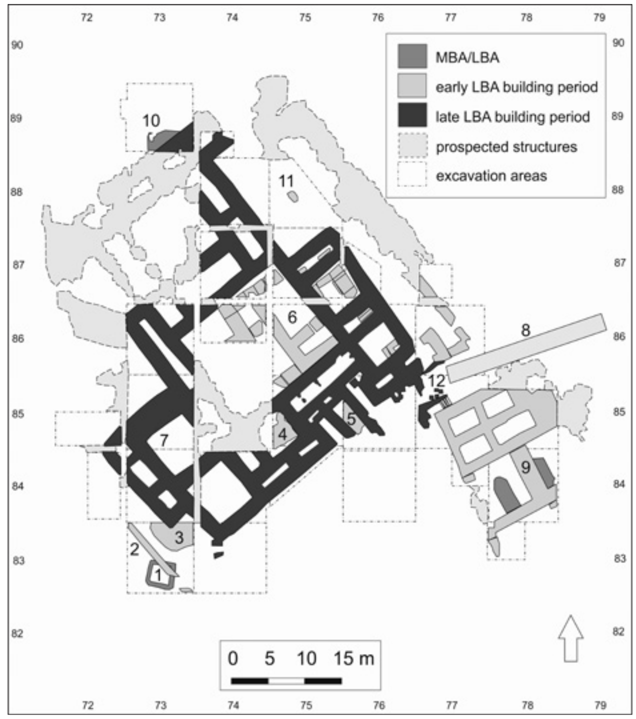

Figure 1.6.1. LBA structures at Oymaağaç Höyük: (1) Silo; (2) ditch; (3)–(5) cult-related deposits; (6) Old Temple; (7) New Temple; (8) Underground Stairway; (9) East Gate and adjacent sections of the wall; (10) house remains; (11) wall remains; (12) pot pits; the Underground Stairway belongs both to the early and late LBA building period; only selected features of the geophysical survey are indicated. (After Hnila in Czichon et al. 2016, redrawn.)

Therefore, the EBA and older LBA stratigraphy at Oymaağaç Höyük has to be based on the results of both ceramic studies and archaeological features and must still be regarded as preliminary (Czichon et al. 2016). EBA house and oven structures in the southern hillside—square 7383—represent the earliest true settlement features, while the Middle Bronze Age (MBA), regionally also referred to as "Karum period", may in fact represent a local stratigraphic gap encompassing several centuries. It is only at the transition between the MBA and LBA that settlement activities become more clearly visible. This transition relates to the Hittite settlement of the area and starts a new chapter in the local history. Including the following LBA, three building periods can be discerned, which can be further broken down into building phases.

An outstanding feature of the MBA/LBA transition period was the installation of a Silo (Figure 1.6.1:structure 1), cutting more than 4 m deep into prehistoric layers. These structures were probably designed to store solid food items such as grains. The stonewalled, roughly square-shaped structure measured 2.5 × 2.5 m at its top, tapered slightly toward its base, and was covered with plaster in its lower parts. It possibly was in use for a short period only. This is indicated by the lack of repair in the masonry as well as the presence of EBA and early Hittite pottery throughout the fill. It was probably abandoned before the erection of the first monumental building occurred. Similar structures may have been present in its immediate surroundings, but this area has not been excavated to the same depth. Regarding architecture, the best parallels are known from Alaca Höyük (Richter in Czichon et al. 2016). Other remnants of the MBA/LBA transition period are wall fragments in 7389, within the East Gate (Figure 1.6.1:structures 10, 9), and erosion layers underneath the older monumental building (Table 1.6.1: Old Temple F0 outer walking horizon).

The next building period is defined by the construction of the older monumental building (Old Temple), which is assumed to have taken place in the seventeenth/sixteenth century BC. Interpretation of this building as a temple is based on the composite type of masonry used, its layout, the orientation corresponding to the New Temple, and the associated finds—e.g., fragments of bull terracottas, and cult-specific pottery. As can be inferred from the areas unconcealed by younger architecture, its principal visible components are an oblong room (7 × 5.5 m) with an entrance hall. These represent the core elements of any Hittite temple. Similarly, there were smaller rooms along the sides, and the building may have stretched further south, but this cannot be confirmed due to the overlying strata. Its documented surface covers 235 m^2. Living floors, the only ones documented, survived inside two rooms, Old Temple C (see Table 1.6.2 and p. 101 below). All rooms were deliberately filled up in the second building phase of the Old Temple in order to provide stable foundations for the building.

The excavated parts of the city wall, the East Gate, and the Underground Stairway (Figure 1.6.1: structures 9 and 8), all typical elements of Hittite urbanism, likely were constructed at the same time. Since faunal remains from these parts are not treated here, their building history (see Czichon et al. 2011, 2016) is not described in detail. According to the geomagnetic survey, features interpreted as walls delimit an area of approximately 2 ha. This renders the existence of a lower town quite likely. All mentioned structures were rebuilt or repaired several times. A number of smaller archaeological features fit either into a later phase of this period or into the interval between the Old Temple and New Temple. Apart from a ditch (Figure 1.6.1:structure 2), a series of pits or depressions with undoubted ritual content indicated by special pottery types could be located underneath the southeastern corner and the entrance area of the New Temple (Figure 1.6.1:structures 3–5; Old Temple A, see Table 1.6.2 and p. 101). The Old Temple was burnt around the fifteenth/fourteenth century BC.

Erosion debris accumulated above the ruins and there may have been a settlement hiatus or only makeshift building activities for about the next 150 years. This is indicated by the pottery spectrum of the Old Temple and dendrochronological dating of wooden constructions of the New Temple. The postulated gap is in accordance with historical sources indicating a Hittite retreat from this area and namely the temporary loss of the sacred city of Nerik, possibly to the Kaskians. This does not necessarily imply an interruption of ritual activities and the mentioned cultic deposits (Old Temple A) could well originate from this period. The younger temple was only erected, at the earliest, around the second third of the thirteenth century BC. During this last Hittite settlement period, the Underground Stairway was reused, but the fortifications apparently were not. If fortifications existed, these were outside of the prospected area.

The foundation works for the New Temple brought about heavy interventions into older strata, down to a depth of 4 m, and were accompanied by stone robbing from the Old Temple. Its walls were left intact only in places where they were needed for the new construction's stability. Superimposed upon a base of rocks, the walls of the New Temple were also built in a "composite" manner, consisting of alternating blocks of mud brick and half-timbered constructions filled with rocks and mud bricks. According to the excavators, all boxes inside the walls, all rooms behind them, and the Courtyard were already filled up in the course of the building process in order to enhance the foundations' stability. Therefore, all remaining architectural parts do not represent cellars or basements but substructures, which were mostly not visible during the time of occupation. Independent evidence for this is indicated by the burning observed in the sediments of the room fills, including on animal bones, which can be related to the final conflagration event. Surfaces that are practically devoid of finds survive only outside of the building. The layout of the New Temple, an asymmetrical arrangement of rooms around a central courtyard, is apparent from the excavation plan and the results of the survey (Figure 1.6.1:structure 7). It reached farther north and probably farther south than the older building covering a surface of 1440 m^2. Its multiple rooms make it look antique compared to coeval Hittite temples. It is possible that its outline had to follow the one of the Old Temple: with the single entrance facing south toward the slope, the different levels of the Courtyard and the outside area had to be bridged by a ramp and a staircase. This presented the architects with a special challenge. For archaeologists, it resulted in a quite complicated stratigraphy including at least three building phases. With a staircase and a columned hall, this entrance area is without parallel in Hittite architecture, although its elements are known elsewhere. Due to the repeated reconstruction works, rubbish resulting from the use phase of the New Temple, including ritual activities, accumulated in squares 7585 and 7685. Some of these renovations may have become necessary due to structural reasons and/or damages caused by earthquakes. As in the case of the preceding temple, the combination of architectural features, selected types of pottery, and small finds—which include so-called ritual deposits and cult-related texts (Czichon et al. 2016)—allow for the structure's identification as a temple rather than a palace. A devastating fire that occurred at the beginning of the twelfth century BC destroyed the New Temple. This event is likely to be related to, if not coincident with, the end of the Hittite empire.

Animal Bone Samples: Definition of Contextual Aggregations

Because animal bone studies rely primarily on comparisons of relative abundance, the definition of analytical units, or contextual aggregations (Marom and Bar-Oz 2013), is important. This holds especially true for complex archaeological situations involving built structures like at Oymaağaç Höyük. In an earlier study about the site, animal bone samples from a limited number of features were compared according to their occurrence in excavation squares, appearance in context types, and provisional stratigraphic affiliations (Kunst et al. 2016). Further, remains from the overlying IA deposits and data from other Hittite or IA sites in the wider region (von den Driesch and Pöllath 2004; Zeder and Arter 1994) were included. Admittedly, some of the stratigraphic terms, especially concerning the BA, were imprecisely or incorrectly applied. For the following reasons, it is now possible to define the origins of faunal data much more precisely and to put them into a coherent contextual framework:

(1) An advanced stratigraphy of the BA has been finalized, namely the discovery of the Old Temple, in the course of ongoing excavations and the different building phases of both the Old Temple and the New Temple;
(2) The results of intensive pottery studies since 2015 can be broadly included; although Hittite pottery is not suited for precise chronology, it can provide important information concerning function and origin of contexts;
(3) The animal remains database has been enlarged considerably; during the last campaigns, an emphasis was put on the study of samples from areas deemed essential by the excavators.

Therefore, this study relies entirely on intrasite comparisons of BA samples from the wider area of both the Old Temple and the New Temple and from the Silo. This implies a certain temporal depth and spatial extension. Altogether, over 30 samples from 8 squares, comprising about 4,700 identifiable specimens, are available. Two important structures had to be largely omitted from analysis: the faunal remains around the East Gate, an important element of the older-temple period, have scarcely been studied so far. In addition, the fill of the Underground Stairway, which certainly represents the most spectacular surviving monument at Oymaağaç Höyük, obviously represents a time-averaged mixture of BA and IA material. Furthermore, the IA material is no longer used as an out-group for comparative purposes. It has been sufficiently demonstrated that the taphonomic and cultural background of the IA samples is quite different for both species and skeletal-element composition (Kunst et al. 2016).

In the following discussion, an overview of the chosen samples and information on their contexts is presented, especially regarding the assumed site formation processes and the principal features of associated pottery. To allow for a comparison with the database on the website, locus numbers are sometimes indicated; these appear in the following format: number of square:ordinal number—e.g. 7586:155, fill of the Courtyard of the New Temple. Loci exhibiting sufficient specimen counts are treated as individual entities and used for further analysis. A minimum number of 70 specimens of the main domesticates was taken as the lower limit (Table 1.6.1).

Table 1.6.1. Fragment counts and weights of main domesticates.

FRAGMENT COUNTS (N)									
	OYM_1	**OYM_2**	***Bos***	***O/C***	***Sus***	**N3**	**% *Bos***	**% *O/C***	**% *Sus***
Courtyard fill	7586	85	173	663	37	873	19.8	75.9	4.2
Courtyard fill	7586	103	26	110		136	19.1	80.9	0.0
Courtyard fill	7586	155	24	179	3	206	11.7	86.9	1.5
Courtyard fill		all	241	993	42	1,276	18.9	77.8	3.3
Room fill	7585	140	13	133	9	155	8.4	85.8	5.8
Room fill	7585	156	21	176	1	198	10.6	88.9	0.5
Room fill	7585	166	35	222	4	261	13.4	85.1	1.5
Room fill		all	69	531	14	614	11.2	86.5	2.3
Accumulation	7383	223	216	95	69	380	56.8	25.0	18.2
Accumulation	7383	225	54	28	20	102	52.9	27.5	19.6
Accumulation	7383	240	18	49	15	82	22.0	59.8	18.3
Accumulation	7383	242	29	145	11	185	15.7	78.4	5.9
Accumulation	7383	249	47	57	32	136	34.6	41.9	23.5
Accumulation	7383	256	46	46	18	110	41.8	41.8	16.4
Accumulation	7383	259	36	34	16	86	41.9	39.5	18.6
Accumulation		all	536	570	227	1,333	40.2	42.8	17.0
Silo	7383	248	28	87	33	148	18.9	58.8	22.3
Silo	7383	257	33	262	54	349	9.5	75.1	15.5
All		all	61	349	87	497	12.3	70.2	17.5
Old Temple	cult-related	A2	6	223	4	233	2.6	95.7	1.7
Old Temple	cult-related	A3	28	66	2	96	29.2	68.8	2.1
Old Temple	cult-related	A4	12	139	3	154	7.8	90.3	1.9
Old Temple	cult-related	A all	46	428	9	483	9.5	88.6	1.9
Ditch	early LBA	B	7	15	7	29	24.1	51.7	24.1
Old Temple	room fill	C	16	48	8	72	22.2	66.7	11.1
Old Temple	small pits	D	1	3	1	5	20.0	60.0	20.0
Old Temple	mud brick	E			2	2	0.0	0.0	100.0
Old Temple	outside floor	F0	5	11	3	19	26.3	57.9	15.8

Table 1.6.1. (cont.) Fragment counts and weights of main domesticates.

FRAGMENT COUNTS (N) (cont.)									
	OYM_1	**OYM_2**	***Bos***	***O/C***	***Sus***	**N3**	**% *Bos***	**% *O/C***	**% *Sus***
Old Temple	destruction layer	F	14	83	4	101	13.9	82.2	4.0
New Temple	above floor	G1	9	45		54	16.7	83.3	0.0
New Temple	above G1)	G2	14	112	8	134	10.4	83.6	6.0
New Temple	above pave-ment	G3	1	16	2	19	5.3	84.2	10.5
New Temple	above G3)	G4	20	440	5	465	4.3	94.6	1.1
New Temple	Pavol_G_total	G all	44	613	15	672	6.5	91.2	2.2
Ramp	reconstruction		15	138	2	155	9.7	89.0	1.3

FRAGMENT WEIGHT (gr)									
	OYM_1	**OYM_2**	***Bos***	***O/C***	***Sus***	**G3**	***Bos***	***O/C***	***Sus***
Courtyard fill	7586	85	2,730.4	2,888.5	232.2	5,851.1	46.7	49.4	4.0
Courtyard fill	7586	103	605.1	587.5		1,192.6	50.7	49.3	0.0
Courtyard fill	7586	155	295.3	921.7	22	1,239	23.8	74.4	1.8
Courtyard fill		all	3,839.3	4,607	263	8,709.3	44.1	52.9	3.0
Room fill	7585	140	174.4	372.2	45.1	591.7	29.5	62.9	7.6
Room fill	7585	156	233	546.1	9	788.1	29.6	69.3	1.1
Room fill	7585	166	254.1	574.5	24	852.6	29.8	67.4	2.8
Room fill		all	661.5	1,492.8	78.1	2,232.4	29.6	66.9	3.5
Accumulation	7383	223	5,325.8	613.4	1,409.8	7,349	72.5	8.3	19.2
Accumulation	7383	225	778	128.9	186.8	1,093.7	71.1	11.8	17.1
Accumulation	7383	240	653.9	189.4	246.2	1,089.5	60.0	17.4	22.6
Accumulation	7,383	242	423.9	758.7	74.8	1,257.4	33.7	60.3	5.9
Accumulation	7383	249	882.6	200.2	374.4	1,457.2	60.6	13.7	25.7
Accumulation	7383	256	1,304.4	236.3	380	1,920.7	67.9	12.3	19.8
Accumulation	7383	259	507.8	192.3	176.2	876.3	57.9	21.9	20.1
Accumulation		all	12,121.6	2,982.2	3,639.7	18,743.5	64.7	15.9	19.4
Silo	7383	248	716.2	371.9	393.2	1,481.3	48.3	25.1	26.5
Silo	7383	257	901.7	625.4	373.5	1,900.6	47.4	32.9	19.7
All		all	1,617.9	997.3	766.7	3,381.9	47.8	29.5	22.7
Old Temple	cult-related	A2	106.8	552.8	22.3	681.9	15.7	81.1	3.3
Old Temple	cult-related	A3	431.7	268.4	20.9	721	59.9	37.2	2.9
Old Temple	cult-related	A4	193.9	360.4	10.6	564.9	34.3	63.8	1.9
Old Temple	cult-related	A all	732.4	1,181.6	53.8	1,967.8	37.2	60.0	2.7

Table 1.6.1. (cont.) Fragment counts and weights of main domesticates.

FRAGMENT WEIGHT (gr) (cont.)									
	OYM_1	**OYM_2**	***Bos***	***O/C***	***Sus***	**G3**	***Bos***	***O/C***	***Sus***
Ditch	early LBA	B	118.3	56.8	60.1	235.2	50.3	24.1	25.6
Old Temple	room fill	C	224	238.1	87.3	549.4	40.8	43.3	15.9
Old Temple	small pits	D	8.4	5.3	5	18.7	44.9	28.3	26.7
Old Temple	mud brick	E			4.8	4.8	0.0	0.0	100.0
Old Temple	outside floor	F0	90.6	51.1	18.7	160.4	56.5	31.9	11.7
Old Temple	destruction layer	F	249.5	239.6	10.5	499.6	49.9	48.0	2.1
New Temple	above floor	G1	99.9	166.2		266.1	37.5	62.5	0.0
New Temple	above G1	G2	98.1	332.3	17.7	448.1	21.9	74.2	4.0
New Temple	above pavement	G3	4.5	76	12.6	93.1	4.8	81.6	13.5
New Temple	above G3	G4	175.8	853.1	35.3	1,064.2	16.5	80.2	3.3
New Temple	Pavol_G_total	G all	378.3	1,427.6	65.6	1,871.5	20.2	76.3	3.5
Ramp	reconstruction		207	349.5	13.7	570.2	36.3	61.3	2.4

Contextual Aggregations

Defined by the state of both pottery and animal-bone research, the following aggregations of contextual units were used for intrasite comparisons. Starting with the supposed earliest findings, they are presented not strictly in their chronological order but rather as functional units. The areas and loci involved as well as the provisional stratigraphic affiliations are also indicated in Table 1.6.2.

Silo (Figure 1.6.1:structure 1). The two loci included here represent different levels of the Silo fill. Both EBA—prehistoric—and early Hittite pottery are present. The former is dominant, which points to an early date for the fill process that probably antedates the construction of the Old Temple. Given the spacious dimensions of the Silo, the amount of animal bone finds is comparatively low, especially in the lower part of the fill. This section alone comprises more than 3 m of depth but yielded only about 2 kg of bones.

Accumulation around the Silo. Originally interpreted as house foundations, house interiors, or operation surfaces for the Silo, now are more neutrally regarded as unspecified accumulations. This group of closely associated contexts possibly represents the top layers of further, yet unexcavated, filled-up silos. Resulting from an area not directly related to either of the temples, it forms the most important “out-group” studied so far for faunal analysis. Altogether, over 1,300 identifiable specimens with a weight of more than 13 kg were retrieved from these units. Their pottery content, which has not been in the focus of research recently, consists of a mixture of EBA and MBA/LBA transition period sherds. Like in the Silo fill, EBA sherds are dominant here, but the percentage of undiagnostic fragments is remarkably high in some loci. The formation of these loci, therefore, may also have taken place before the erection of the Old Temple, only somewhat later than the fill of the Silo proper. Seven loci, which mostly represent artificial units, produced sufficient faunal remains to allow their treatment as individual subsamples. Although some differences regarding species composition and average fragment weights become apparent among these samples (see Figures 1.6.2 and 1.6.3 below), due to their contiguous stratigraphic positions, all units belonging to the Accumulation are also treated as

Table 1.6.2. Contextual aggregations.

Context	Square (OYM 1)	Loci (OYM 2)	Sufficient sample	Relative chronology
Silo fill	7383	248, 257	yes	before construction of Old Temple
Accumulation around Silo	7383	223, 225, 240, 242, 248, 249, 256, 257, 259	yes	? before construction of Old Temple
Old Temple A2 cultic deposits	7383	133, 176, 185, 186, 190, 193, 202	yes	construction of Old Temple or later
Old Temple A3 cultic deposits	7585	237	yes	construction of Old Temple or later
Old Temple A4 cultic deposits	7685	142	yes	construction of Old Temple or later
Old Temple B ditch	7383	136, 140, 141, 148, 184, 188, 189	no	construction of Old Temple or later
Old Temple C1 living floors	7486	35	no, only combined	construction/use period of Old Temple
Old Temple C2 living floors	7586	84, 72	no, only combined	construction/use period of Old Temple
Old Temple C3 living floors	7587	33, 48, 53, 57, 59, 60	no, only combined	construction/use period of Old Temple
Old Temple C4 living floors	7587	29, 35, 44, 46, 47, 52, 54, 55, 66, 67	no, only combined	construction/use period of Old Temple
Old Temple D small pits	7686	116, 125	no	use of Old Temple or earlier
Old Temple E	7686	101	no	construction of Old Temple
Old Temple F0	7686	115, 118, 120, 121	no	use of Old Temple or later
Old Temple F destruction horizon	7486	44	no, only combined	use of Old Temple or later
Old Temple F destruction horizon	7686	98, 103, 104, 111, 112, 113, 114, 117	no, only combined	use of Old Temple or later
New Temple deposits and fills G1	7585	143, 102	no, only combined	use of New Temple
New Temple deposits and fills G1	7685	169	no, only combined	use of New Temple
New Temple deposits and fills G2	7585	81, 93, 101, 122, 126, 133	yes	use of New Temple
New Temple deposits and fills G3	7685	144, 145, 151	no, only combined	use of New Temple
New Temple deposits and fills G4	7685	95, 103, 108, 114, 115, 116, 128, 134, 135, 138, 141, 153, 154	yes	use of New Temple
New Temple ramp	7585	108, 113, 123	yes	use of New Temple
New Temple courtyard fills	7586	85, 103, 136, 148, 154, 155	yes	construction of New Temple
New Temple room fills	7585	140, 156, 166	yes	construction of New Temple

a summarized entity. This also holds true for all the other aggregations described here.

Old Temple A Cultic Deposits/Deposits with Ash (Figure 1.6.1:structures 3–5). This group combines spatially separated, well-delimited contexts classified as small pits, an ash pit, deposits with ash, jar horizons, and more. Bones from A1 have not been analyzed yet. A2 encompasses a set of seven spatially closely related loci, which were originally interpreted as resulting from a foundation sacrifice. A3 and A4 consist of one single locus each. In-situ photographs of both units, showing dense concentrations of sherds and, in the case of A4, also of animal bones, are presented by Hnila (Czichon et al. 2016:Figure 10; Kunst et al. 2016:Figure 10.6). As described above, all these deposits were a priori defined as closed, cult-related contexts because of their limited pottery spectrum comprising mainly small jars, bowls, and plates ("microvessels"), including complete vessels—all commonly related to ritual activities. Locus 7685:142 alone contained over 100 typological specimens (Czichon et al. 2016). There is also a negligible percentage of EBA sherds in A2.

The similarity in the associated pottery collections justifies the combination of the animal-bone assemblages from units A2–4 into one single aggregation, although they were retrieved from contexts 10–30 m apart from each other (Figure 1.6.1:structures 3–5). Because an immediate connection between these contexts and the stratigraphy of the Old Temple is lost, they can only provisionally be linked to its construction period. They might even result from the period after the destruction of the Old Temple because cult activities may have been going on beyond that event.

Old Temple B Ditch (Figure 1.6.1:structure 2). The number of animal remains from a shallow ditch running above the Silo is insufficient for further analysis. However, it is noteworthy that all groups of the domestic triad are present in rather balanced proportions. The chronological position of the fill may be comparable to Old Temple A.

Old Temple C1–4 Living Floors. Various loci from three different, yet adjacent, squares represent the use phase of the Old Temple. These contexts, interpreted as accumulations, fill horizons, or mud-brick debris, may also have accumulated between two subsequent building stages of the Old Temple. Apart from 20–35% of EBA pottery, ceramics of older Hittite character—seventeenth–fifteenth/fourteenth century BC—prevail. These often appear to be related to household activities and comprise a more varied spectrum than the cultic deposits. They include jars, cooking pots, and lids. Further, fragments of bull terracottas have been found. The animal bone finds from the living floors, conceivably representing more "unspecialized" activities, would make a good comparative group for the "cultic" deposits. Unfortunately, only a small number of faunal remains were recovered from these contexts, leaving only the combined aggregation (C1–4) amenable for analysis.

The aggregations Old Temple D small pits, Old Temple E mud-brick layer, and Old Temple F0 outer walking horizon all produced only few animal remains. Therefore, they do not allow for any detailed quantitative comparisons. However, compared to the cultic deposits—Old Temple A—and the fills of the New Temple, these small assemblages are characterized by the consistent presence of all main domesticates in most samples and, mostly, by the absence of caprine dominance. Scattered human remains were present in F0 outer walking horizon.

Old Temple F Destruction Horizon. These contexts derive from two squares separated by about 10 m from each other. Only when combined do they provide a sufficiently large aggregation of faunal remains for analysis. The loci were defined as mud-brick debris, accumulations of burnt clay, charcoal, and bricks or loose rubble of building materials. Locally, concentrations of pottery and animal bones were observed and heat influence on the bones and other remains is widespread. Percentages of EBA pottery vary between 5% and 40%, but generally LBA pottery dominates.

New Temple G Deposits and Fills from the Use Period of the New Temple. The contexts from groups G1–4 in fact represent a stratigraphic sequence from two adjacent squares around the entrance area of the New Temple. G1 and G3 include fills, which accumulated above floors and pavements, while G2 and G4 were situated directly on top of them, respectively. These top layers contribute the majority of the finds. All these contexts were generated in the course of repeated renovation works, thus belonging to the use period of the New Temple.

In addition, all contained important accumulations of cult-related pottery, most notably G4. From Locus 7685:103 and Locus 7685:108 alone come over 150 restorable typological specimens of small bowls and plates, including complete specimens, all wheel-thrown pottery produced quickly and haphazardly. Small jugs and libation vessels are the main ceramic types represented. In comparison to Old Temple A cultic deposits, the pottery spectrum is even more limited, and most types can be interpreted as cult or votive vessels in a stricter sense. Residual EBA pottery normally is less than 10% of the finds. These dense accumulations of pottery are often accompanied by equally extensive concentrations of animal bones. Thus, G2 and G4 contained sufficient material and could be treated as independent aggregations.

New Temple Ramp. Collected from the same entrance area as G1–4, these contexts derive from an outer part of the Ramp, where no floor or pavement could be documented. Cult-related pottery was present as well, albeit a smaller percentage. All aspects considered, this aggregation is very similar to that at the New Temple G1–4, both regarding its chronology and assumed taphonomic pathway.

New Temple Courtyard Fills. The six loci included here are more or less artificially divided into subunits or levels even though they come from basically the same context. They derive from one square, which encompasses the southeastern corner of the central Courtyard of the New Temple. This is the largest contiguous area of the Courtyard excavated so far. As previously mentioned, this fill was purposefully created in order to enhance the stability of the foundations of the New Temple. The pottery found here frequently comprises sherds with rounded edges, including larger specimens. Prehistoric pottery attains percentages of up to 30%. Beyond that, the finds yielded a good survey of older Hittite pottery (seventeenth–fourteenth century BC). As opposed to the pottery of the last Hittite phase, they are characterized by higher diversity and quality. Some pieces appear even younger and may correspond to the building period of the New Temple. Fragments of animal figurines have also been found.

According to Mielke (Czichon et al. 2016:48), most of these artifacts probably derive from bodies of sediment previously deposited nearby and deliberately dug out when fill material was needed in the course of the foundation works. Three of the loci produced sufficient animal remains to be treated as individual aggregations. The total sample from the Courtyard, with more than 1,250 (8.7 kg) remains of the main domesticates, occupies the second place after the Accumulation around the Silo. In contrast to the pottery, there appear to be few signs of redeposition among the animal remains.

New Temple Room Fills. Like the Courtyard fills, the three loci summarized here are artificially separated levels of the same fill, albeit from the entrance area of the New Temple. They, too, derive from one square adjacent to the Courtyard in the south, but they were deposited inside one of the casemate structures or Rooms of the southern wall. Thus, a taphonomic pathway similar to the Courtyard can be assumed for both the pottery and animal-bone assemblages. Like in the Courtyard, this fill does not represent the use phase of the temple but a constructive element of its foundations. The percentage of EBA—prehistoric—pottery is higher here, reaching up to 40%. Therefore, the sediment was probably brought in from a different area or in the course of a separate process. All three loci produced sufficient animal remains for an individual analysis, although the overall amount is considerably smaller than in the Courtyard (614 NISP of main domesticates or 2.4 kg).

The contextual aggregations selected for study present a dataset sufficiently heterogeneous for intrasite comparison. This is already reflected in the names assigned to different areas and, more specifically, from their pottery content. The following sections focus on investigating whether these differences are also corroborated by faunal evidence and whether these occur consistently throughout the different levels of the contextual aggregations. Due to the fact that the main domesticates—cattle, caprines (sheep and goat), and pig—account for the majority of identified specimens in all samples, tripolar graphs (cf. O'Connor 2003) were deemed the appropriate tool for demonstrating patterns of taxonomic variability, both regarding fragment (specimen) counts and fragment weights. N3 and G3 indicate the total of the specimen counts (NISP) and the total weights of these main domesticates in any contextual category. Beyond taxonomic representation, all other data categories commonly studied—osteometry, age-at-death, bone modifications, and the like—were also

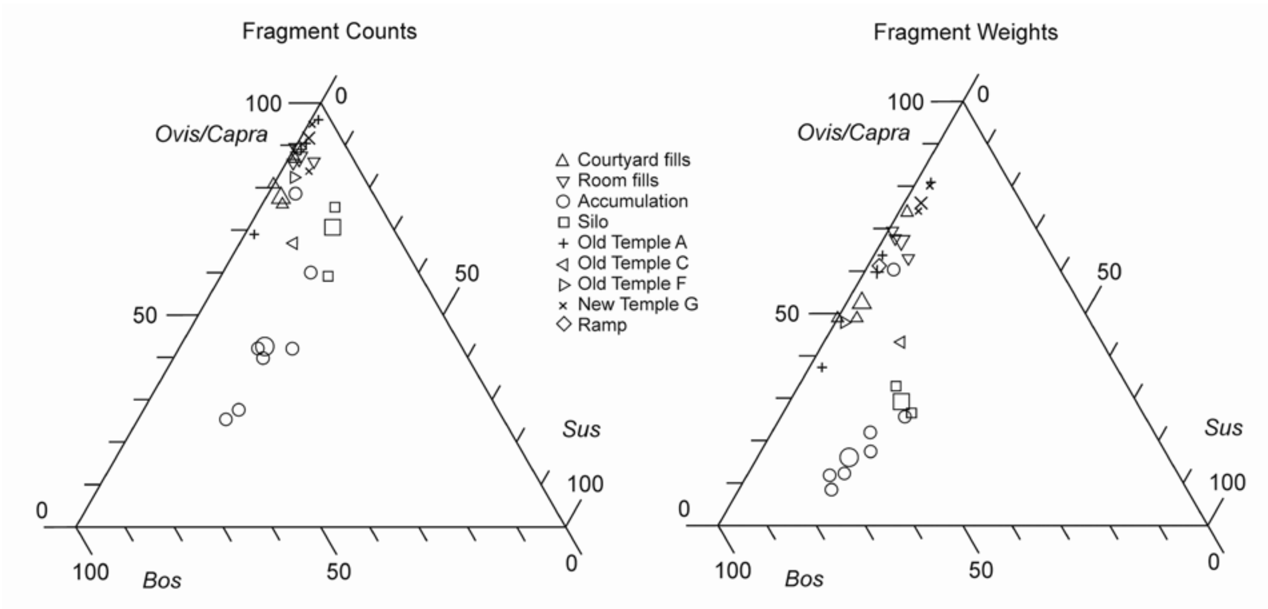

Figure 1.6.2. Tripolar graphs indicating the relative frequencies of the main domesticates for fragment (specimen) counts and fragment weights (N3 and G3) in the text. Within context groups (Courtyard fills, Old Temple G, etc.) the same symbols are used for each sample, while means for context groups are indicated by the larger symbols.

recorded. Average fragment weights and skeletal part frequencies were also found to be of some relevance for categorization.

Results

Relative Proportions of the Main Domesticates

The results regarding specimen counts (NISP) and weights (N3 and G3, for the three groups of the main domesticates: cattle, caprines, and pigs, respectively) for any category with at least 70 specimens of the group total (N3>70) are indicated in Figure 1.6.2; the database is presented in Table 1.6.1. Results for smaller samples are indicated in Table 1.6.1 but were not included in Figure 1.6.2. Groupings are apparent in both the NISP and the weight diagrams of Figure 1.6.2 but do not necessarily represent a congruent pattern.

Fragment Counts (N3). With the exception of the Accumulation around the Silo, the data points tend to cluster toward the caprine maximum, exhibiting a proportion of 70% caprines or more. Furthermore, it is only in the Silo that pigs take the second position ahead of cattle. Both the Silo and the Accumulation present an almost consistent amount of 20% pigs, which was not observed anywhere else. The main variability, however, occurs along the connecting line between caprines and cattle. The highest caprine percentages, around 90% or more, are attained by individual data points of the cultic contexts of Old Temple A, New Temple G, and the Ramp, followed by the room fills, Old Temple F—destruction horizon—and the Courtyard fills. There is, however, a considerable overlap among the first four categories—Old Temple A, New Temple G, Ramp, and room fills—which makes this area of the diagram densely populated and thus somewhat difficult to read.

On the other hand, room and Courtyard fills are clearly separated. There are some noteworthy outliers, however, namely 7383:242 of the Accumulation, which exhibits a relatively high percentage of caprines (78.4%), and Old Temple A3, with just under 70% of caprines. The position of Old Temple C, the only context defined archaeologically as containing unspecific settlement debris, indicates a rather balanced distribution, at least among the results from the proper temple area. Admittedly, the N3 values of these two samples are below 100 and the results should therefore be treated with some caution. The widest dispersion of individual data points from one category was greatest in the Accumulation followed by the Silo. The two cultic/ritual groups Old Temple A and New Temple G, apart from the outlier, exhibit an intermediate pattern, while Courtyard fills and room fills appear as rather homogenous categories. These dispersions are mainly caused by differences in the caprine:cattle ratio.

Fragment weight (G3). The Accumulation and the Silo samples, with the exception of the outlier (7383:242), appear shifted toward the cattle maximum and are significantly less dispersed than in the NISP diagram. Pig percentages remain almost unaffected (20–30%), indicating important differences in skeletal-part preservation among the smaller species. The other data points are rather loosely scattered along the caprine:cattle line. Overall dispersion is higher here than in the NISP diagram and differences among context groups other than the Silo and the Accumulation are more clearly visible. The outliers Old Temple A3 and Old Temple C retain marginal and central positions respectively. In the weight diagram, the cult-related samples from New Temple, together with Old Temple A2, occupy the caprine maximum (75–82%). They are accompanied by 7586:155 from the Courtyard fills, which points to a combination of comparatively light remains of cattle with rather heavy ones of caprines. In other contexts, both room fills and Courtyard fills exhibit a consistently clustered distribution of data points, remaining clearly separated from each other. The remainder from Old Temple A, the Ramp, and the outlier of the Accumulation are situated between them. The data point for the destruction horizon from Old Temple F is located among the Courtyard fills.

Summarizing the results, the following observations appear to be of interpretative value: the N3 and G3 proportions of the only two categories originating from outside of the temple area, the Accumulation and the Silo, are set apart from the rest, as well as plotting next to each other. This is due to their balanced species distribution, which may also account for the considerable dispersion of individual data points in the NISP—fragment counts—diagram. Presently, it cannot be decided if their species composition is controlled by their spatial or rather by their chronological position, which is deemed earlier than the remainder of the samples (Table 1.6.2). At the opposite end of the distribution of the data points, maximum caprine values are consistently represented by categories with a cultic/ritual aspect: Old Temple A and New Temple G. However, caprine dominance appears to be less consistent in Old Temple A. This may be related to the fact that this aggregation consists of discrete, spatially separated contexts (Figure 1.6.1), which are only subsumed in one category because of their archaeological interpretation—primarily based on pottery. The highly structured nature of some of these samples is, in principle, in accordance with an interpretation as "ritual refuse."

The two large groups of fills, resulting from the Courtyard and from the Room(s), exhibit relatively consistent differences in their respective cattle:caprine ratios, with generally higher amounts of caprines in the room fills. Furthermore, with one single exception, both give the impression of being rather homogenous and structured entities throughout. This is evidenced by the generally low dispersion of data points in these two categories. This observation may be at odds with the idea that they result from randomly picked sediment bodies, as has been hypothesized for the pottery from these fills. It instead indicates a strong shaping agent being responsible for their formation. If any category appears randomly selected and accumulated, it would be the Accumulation (p. 99).

Although the minor samples are not very large, their composition requires further attention. For instance, the Old Temple C sample, allegedly collected from room fills and living floors of the Old Temple, appears in fact to be the most balanced category from the temple area in terms of expected taxonomic composition. Although they cannot be analyzed statistically due to their small sample size, categories like Old Temple B, an early LBA ditch, and Old Temple F0, a living surface outside of the Old Temple A, are likewise not characterized by a dominance of caprines. Instead, all elements of the three main domestic taxa are present. Indeed, even some of the large samples from the Courtyard fills (7586:103), room fills (7585:156), New Temple G4, and the Ramp, are almost devoid of pig remains.

Average Fragment Weight of Cattle and Caprines

In order to provide more details about the taphonomic history of the contextual categories chosen for analysis, the average fragment weights for both cattle and caprines are presented in Table 1.6.1. In order to avoid referring twice to the same set of data, the means for the categories (Courtyard fills, Old Temple A, etc.) are not indicated in Figure 1.6.3. Some categories exhibit clear groupings. For

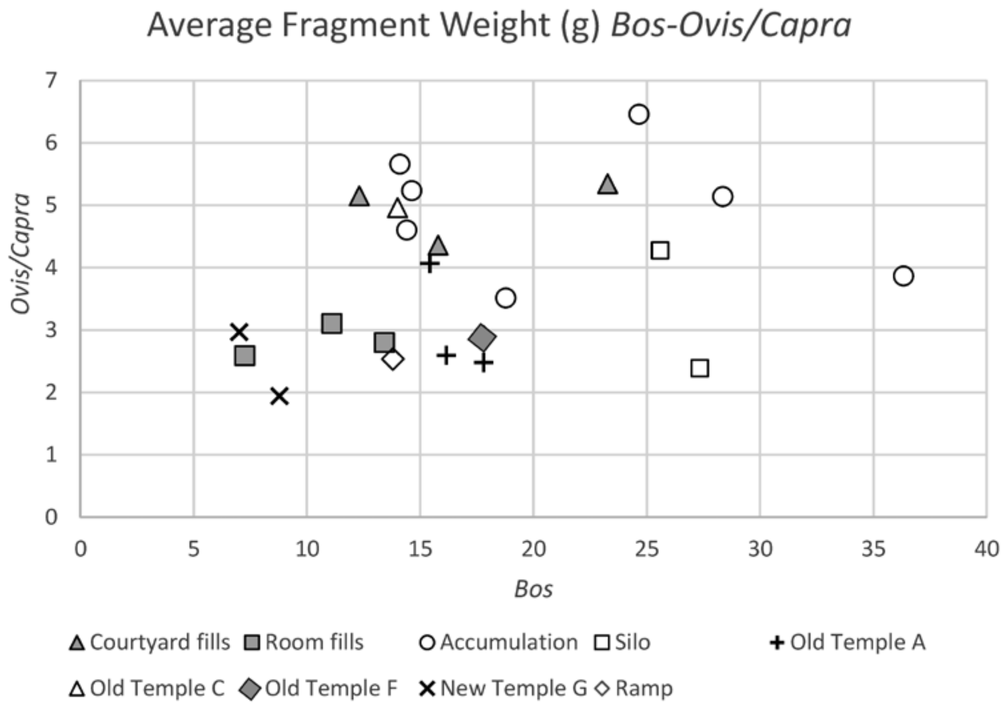

Figure 1.6.3. Scatterplot indicating average weight of cattle and caprine (sheep and goat) remains for individual contexts as shown in Figure 1.6.2. Means for context categories omitted in order not to overload diagram.

instance, the room fills and the cult-related aggregations of the New Temple G and the Ramp exhibit low average weights in both taxonomic groups, especially in regard to the caprines. Furthermore, the average of caprine samples remains fairly the same across the three different samples of room fills, which again suggests homogeneity. The opposite is true for the cult-related aggregations of the Old Temple A, where cattle remains tend to be more prominent by weight.

In the Courtyard fills, the average weights of caprine remains are higher but remain fairly consistent, while those of cattle appear to be rather inconsistent. As in Figure 1.6.2, the data points for Courtyard fills and room fills do not overlap, possibly indicating different taphonomic pathways. Values for the Accumulation around the Silo exhibit a considerable dispersion for some of the seven individual aggregations. This is caused by important variability in the average fragment weights among both cattle and caprines. The Silo fill proper is characterized by bias toward cattle and against caprines, which would explain some of the differences in data positions between the two diagrams in Figure 1.6.2. More generally, these examples demonstrate that closer examination of the interrelationship between taxonomic composition and fragment size/weight is necessary.

Skeletal-Part Representation of Caprines

Skeletal-part profiles were assessed only for caprines because they represent the dominant taxonomic group in most contexts and the only one producing sufficient remains for this analysis. Caprines' skeletal-element data were collected for the Silo, the Accumulation, room fills and Courtyard fills, Old Temple A, New Temple G, and the Ramp. Sample sizes (NISP/weight; Table 1.6.1) vary between 138/349 g (Ramp) and 993/4,607 g (Courtyard fills) and are otherwise well over 300/900 g. These figures have been deemed adequate for the assessment of skeletal-element abundances (cf. Marom and Bar-Oz 2013:234).

Probably due to their smaller size and differences in their butchery and disposal, caprine skeletal profiles tend to deviate less from expected frequencies than those of cattle. Nevertheless, patterns of intrasite differences or marked overrepresentations of certain elements are not infrequently reported and commented upon in the zooarchaeology of

Table 1.6.3. Relative weight percentages of selected caprines' skeletal elements (% of total weight in skeleton or samples).

	Skeleton	Ramp	New Temple G	Old Temple A	Room fills	Courtyard fills	Accumulation	Silo
Mandible	5.3	13.2	7.0	11.9	10.6	18.3	34.1	25.8
Vertebrae, Ribs	30.7	27.6	35.8	17.9	16.7	19.1	8.1	4.9
Humerus, Femur	11.6	13.2	8.8	14.9	14.0	15.3	11.1	12.7
Radius/Ulna, Tibia	11.2	10.5	21.0	18.7	23.9	17.2	18.6	19.5
Metapodials	4.9	0.0	4.1	4.9	9.8	6.5	5.7	7.3
Basipodium, Phalanges	5.6	7.9	8.5	3.1	6.7	3.2	1.9	2.1

Southwest Asia (e.g., Lev-Tov and McGeough 2007; Marom and Zuckerman 2012; Meadow 1983). At Oymaağaç, bone weights were routinely recorded for each specimen. Skeletal-part frequencies are therefore presented by relative weight percentages. The weight percentages of anatomical areas within the respective samples were compared to the standard provided by the IPNA/University of Basel (2018). Thus, it becomes possible to integrate even highly fragmented yet identifiable specimens (e.g., vertebrae and ribs, lose teeth) into the analysis.

In Table 1.6.3 and Figure 1.6.4, results for the aforementioned contextual aggregations are compared to the standard, which represents the expected anatomical representation for a complete skeleton. The anatomical groups included are the mandible, vertebrae and ribs, the upper limbs (humerus and femur), the lower limbs (radius/ulna, tibia), basipodium (carpals and tarsals), phalanges, and the metapodials. Percentages of skulls and shoulder elements as well as pelvic girdle are not shown because incidental occurrences of complete specimens among these groups would strongly influence the diagram.

Figure 1.6.4 indicates important differences between the aggregations. In the lower part of the diagram, the weight percentages of mandibles and axial elements often appear to be negatively correlated. While vertebrae and ribs occur in expected percentages or even higher in the Ramp and New Temple G, and still in about half of their "expected" values in Old Temple A and in both room fills and Courtyard fills, they are much less represented in the Accumulation and Silo. The mandible, on the other hand, is overrepresented everywhere but least so in New Temple G, the room fills, and in Old Temple A. It attains five to six times its expected values in the Accumulation and Silo. Loose mandibular teeth were included in the mandible category, but contribute little to overall weight. While differences between the weight percentages of upper limb elements are comparatively small, those of lower limbs are more accentuated. Radius/ulna and tibia are overrepresented almost throughout but more so in the room fills, New Temple G, and in the Silo. These elements along with the humerus are easy to identify even in heavily fragmented conditions due to their diaphyseal morphologies. Metapodials are overrepresented in all aggregations not immediately linked to ritual activity, most notably in the room fills. However, representing butchery waste, these robust elements often occur in high percentages in faunal assemblages significantly affected by taphonomic processes. This also holds true for the mandible and for skull parts in general. Somewhat contrary to expectation, small elements of the basipodium and phalanges, usually interpreted as waste of initial butchery as well, are best represented in New Temple G, the Ramp, and the room fills. Rather than linked to functional reasons alone, this may be due to a taphonomic environment favoring small-sized specimens. Moreover, these three aggregations also produced the lowest average fragment weights for caprines (Figure 1.6.3). These effects may be interrelated.

The overall bias in skeletal-part profiles appears moderate and none of the assemblages may in fact derive from a single functional source. The deficit of skull parts and the fair representation of the axial skeleton in New Temple G can be interpreted in a straightforward way. These remains likely represent,

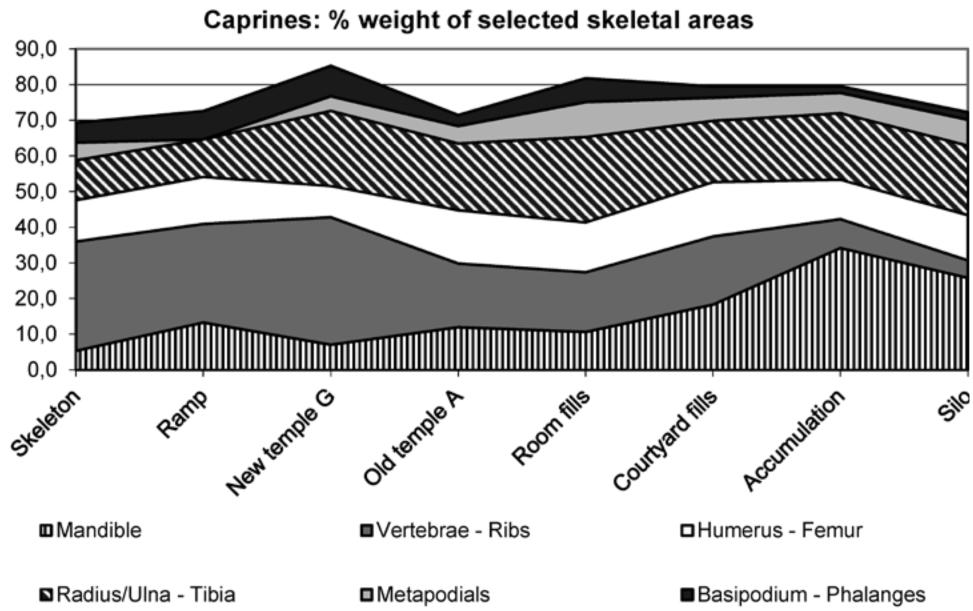

Figure 1.6.4. Relative weight of selected skeletal elements of caprines, expressed as percentages of a skeleton or of sample weights; elements of the skull, the shoulder, and pelvic girdle not shown. Standard skeleton from IPNA/University of Basel (2018).

for the most part, food remains. The same holds true for the Ramp, albeit mandibles are better represented there. There is an obvious cline toward assemblages influenced more by butchery waste, like the Accumulation and Silo. The fills and Old Temple A occupy an intermediate position. These latter, interpreted as an aggregation of in situ contexts, and the room fills produced similar profiles. The percentages of distal-limb parts increase, by comparison, in the room fills. Furthermore, New Temple G exhibits a lower diversity of skeletal parts since the anatomical regions presented in Figure 1.6.4 sum up to over 85% of the complete sample weight. This is the maximum value of the seven aggregations analyzed here; the expected percentage would be approximately 70%.

Discussion

In this section, we take a closer look at the processes thought responsible for the accumulation of animal remains around the temples. These processes can be better understood through references to the functions and evolution, or rather "life-cycles" (LaMotta and Schiffer 1999), of these buildings. They can also be viewed as agents in different taphonomic processes in the formation of the faunal assemblages recovered there. Most analytical categories like species and skeletal-part representation, age profiles, and others are influenced by taphonomic processes, whether mainly anthropogenic or purely natural. Practically all concepts and ideas relevant for this type of approach and for intrasite faunal comparisons in general can be found in Meadow's (1983) study on the faunal remains of the Neolithic dwelling at Hajji Firuz in Iran. "Differential disposal, deposition, and preservation" are key concepts used by Meadow in explaining intrasite variation in faunal assemblages. They cause differential representation and distribution of species and elements at the site (Meadow 1983:370). Both disposal practices (anthropogenic activities) and uneven preservation due to variable robustness between different anatomical elements contributed toward the observed patterns. Consequently, variations in summary data calculated for each phase cannot be simply viewed in terms of chronological development (Meadow 1983:401). This touches on another important issue, namely relationship of animal bone collections to decisions by the excavators on which area of a site to investigate. At Oymaağaç for example, there is an obvious bias favoring contexts close to the temples and built structures in general, all of which were regarded as areas of primary research interest. Samples collected from outside this area, therefore, derive almost exclusively from the Silo and Accumulation, also investigated thanks to the excavation field layout (Figure 1.6.1). Excavations are rarely undertaken with the primary aim of collecting faunal samples or providing reliable coverage for intrasite faunal variability. A consistent difference in taphonomic conditions between house interior and exterior areas is held by Meadow to be one key factor causing variation (1983:370). For example, "bones from exterior loci are more exposed to destruction by weather, trampling, and scavengers" (1983:402), resulting in marked differences in skeletal-part patterns. This indicates a protective taphonomic environment in the case of house interiors and important taphonomic pressure in the outside areas.

One further issue addressed by Meadow concerns the temporal resolution of assemblages and their relation to developmental stages of a dwelling. At Hajji Firuz, certain bone accumulations from house interiors "might represent the remains of a single consumption activity" (Meadow 1983:402). Anticipating abandonment of the dwelling, these assemblages were allowed to accumulate in areas otherwise kept free of waste and may result from a single season, if not from a single event. In contrast, a sample from an exterior locus is believed to have accumulated over a longer period of time. As a consequence, the idea of an "average" faunal assemblage in settlement archaeology is rightly questioned by Meadow (1983:402).

Meadow also makes implicit use of the concept of the "life cycle of dwellings" developed by Schiffer (LaMotta and Schiffer 1999) and the corresponding accumulation processes, including their bearing on faunal analysis. Basically, it implies a sequence of habitation or use, abandonment, and post-abandonment phases of built structures, which are somehow—though not directly—related with episodes of deposition or accretion of primary, secondary, and tertiary refuse (LaMotta and Schiffer 1999). Exchanging "refuse" with "bone," the resulting categories of bone deposition are described as follows in Marom and Zuckerman (2011):

(1) "Primary deposition of bone reflects refuse discarded at the place of animal processing and consumption and thereby provides the highest resolution information on domestic activity areas" (Marom and Zuckerman 2011:42). However, because primary refuse tends to be small-sized, it can be collected only by wet sieving and may thus be of limited identifiability.

(2) "Secondary deposition of bone: … since most identifiable bone fragments are large …, and may prove a sanitary disturbance and a hindrance to movement inside domestic space, they cannot be assumed to be found in primary depositional contexts. … larger bone fragments are routinely removed from household floors to either the area immediately adjacent to the house or to central dumps, which are usually located near the primary consumption area" (Marom and Zuckerman 2011:43). Secondary depositions are therefore regarded as the main source of zooarchaeological data because they "present time-averaged 'samples' of the subsistence activities carried out in a domestic area and are thus of prime importance to the derivation of species, skeleton element abundance, and demographic data" (Marom and Zuckerman 2011:43). If secondary deposition occurs inside buildings, it is likely to indicate abandonment. According to Marom and Bar-Oz, "this secondary accumulation of larger, and therefore more identifiable bones—on living floors—would likely dampen the signal of fewer, smaller bones in primary deposition" (Marom and Bar-Oz 2013:433). Marom and Bar-Oz recommend to solve this dilemma (i.e., sufficient number of finds *versus* sufficient contextual information) by focusing on deposits from streets and open spaces inside settlements because "these contexts would reflect with greater accuracy the time-averaged daily consumption activities of nearby functioning architectural spaces" (Marom and Bar-Oz 2013:433).

(3) "Bones in tertiary position are accumulations brought as construction material—mud bricks or fills—to their archaeological context or otherwise removed from their archaeological context" (Marom and Zuckerman 2011:43). Therefore, they are deemed to be "of little value to faunal analysis as their original spatial and temporal provenance is not known" (Marom and Zuckerman 2011:43). Marom and Zuckerman (2012) explicitly exclude bones from "constructive fills" from their analysis, along with those from topsoil or uncertain stratigraphic provenances.

The adoption of the concept of "life cycle of dwellings" and the different categories of bone depositions may bring about a ranking of contexts with the consequence that some categories are believed to be of greater value than others. Drawing from the rich pool of ideas and data concerning BA cities provided by the authors cited above, we here tested if these concepts can successfully be used for the evaluation of the contextual aggregations at Oymaağaç. It is admittedly questionable whether concepts developed for simple dwellings are adequate in cases of complex, multiphase buildings, including palaces, temples, and industrial or economic installations. Namely, the formation-stages scheme of house-floor assemblages and the accompanying deposition processes provided by LaMotta and Schiffer (1999:20, Table 2.1) does not account for processes linked to construction, repair, and reconstruction. As noted initially, many of the assemblages observed at Oymaağaç accumulated in the course of such episodes, which were often accompanied by deep interventions into older strata. Further insights were established in different areas and periods. For example, Pluskowski comments on the taphonomy of crusader castles in the Baltic region that "[t]he construction history of each castle … accounts for the complicated taphonomy of these sites. Episodes of demolition and rebuilding often truncated earlier phases" (Pluskowski 2012:155).

Regarding the contextual aggregations defined for Oymaağaç, the following categorizations, which are not necessarily mutually exclusive, are suggested:

(1) *Silo and Accumulation.* These two aggregations probably represent secondary depositions in the sense defined above, an assumption that would also account for the large volume of zooarchaeological data generated. These faunal remains may be representative of economic activities from the period of the fill and sediment accumulation. In the case of the Silo fill, abandonment of a production-related structure is evident. Moreover, these are the only larger aggregations definitely deposited outside built spaces.

(2) *Old Temple A and New Temple G.* In the case of Old Temple A, the definition as spatially limited in-situ "sacrificial deposits" (Marom and Bar-Oz 2013:237) is evidenced both by the general archaeological context and the associated pottery. This may also be the case for New Temple G, but this aggregation probably also includes above-floor and floor deposits (Marom and Zuckerman 2011:44). This is also the only available archaeological information concerning the Ramp. Renovation processes are certainly involved in the formation of the latter two aggregations. At least in the case of Old Temple A, some of the spatially discrete contexts may represent primary deposits but of a different nature than those described above. The term sacrificial dump appears to be more adequate.

(3) *Old Temple C living floors.* This aggregation probably comes closest to what is defined as "domestic context" (e.g., Marom and Zuckerman 2012:577), which also explains its "unspecialized" nature.

(4) *Old Temple F destruction horizon.* This and other smaller aggregations are rather self-explanatory. They can be broadly classified as secondary deposits that are at least partially accumulated outside or in close proximity to the building.

(5) *New Temple Courtyard fills and room fills.* Although, based on their formation processes, these aggregations correspond exactly to the "constructive fills" mentioned by Marom and Zuckerman (2012:577), the faunal material does not, at least exclusively, consist of tertiary bone depositions (*sensu* Marom and Zuckerman 2011). They were therefore included in the analysis. A certain structuring found in these assemblages, especially concerning taxonomic composition, indicates that these animal remains were not entirely randomly collected or exclusively brought here with sediments. Apparently, these fills also contain animal-bone assemblages corresponding to in-situ contexts, deriving from little disturbed and discrete dumping episodes. These also holds true for parts of the pottery collection (Dirk Paul Mielke, personal communication 2018). Together with the Silo fill and the cultic deposits, these animal remains, in addition to the sediments they derive from, are the only ones deposited deliberately, albeit for different reasons.

Concerning skeletal-part distribution of caprines, no straightforward interpretation can be provided because several equifinal processes may be involved. Both Marom and Bar-Oz (2013:236) and Lev-Tov and

McGeough (2007:98) report the presence of butchered remains around temple precincts at BA sites in Israel. Therefore, a combination of meat-bearing elements and primary butchery waste can be expected also here.

Conclusion

It has been shown that basic and easily comparable zooarchaeological data, like relative frequencies of the main domesticates and skeletal-part representations of well-represented taxa, can be successfully used for intrasite comparisons. This may especially hold true if the contextual aggregations, used as basic analytic units, derive from complex, multiphase buildings. Variability among samples, due either to human behavior or to other taphonomic processes, is quickly assessed and can be compared with the results from, for example, pottery studies. We believe that any variability observed within faunal data from one site or building is likely to be of some heuristic value. Further, these data can be easily adapted to any scale of analysis deemed sensible within the project (horizons, areas, buildings, context types, association with certain artifacts). Tripolar graphs, both for NISP and bone weights, prove to be an adequate tool for recognizing both groupings and outliers.

In addition to these conventional data, mean element weights of the main domestic mammals and the dispersion of data points observed among contexts from the same aggregation may also contribute to the better understanding of individual taphonomic pathways. At a minimum, the approach provides an opportunity to independently test the homogeneity of aggregations defined by the excavators.

The concepts of "life-cycle" of domestic structures and of primary, secondary, and tertiary deposition can be used in the case of complex buildings as well. In the present case, there is, however, a need for a widening of the concepts because important faunal materials were accumulated in the course of construction and repair works. It cannot be decided if the constructive fills' formation, containing well-structured faunal samples, is specific for Oymaağaç or indeed represents a wider phenomenon. It was therefore decided to include all samples into the analysis that could be defined contextually and chronologically. Thus, information on intrasite variation can be gained and peculiarities of specific contexts also become more visible.

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